HUON AQUACULTURE COMPANY PTY LTD

MACQUARIE HARBOUR SUBMISSION TO EPA (April 2017)

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1. Executive Summary

This submission has been prepared in response to an offer from the Environmental Protection Authority Tasmania **(EPA)** Director (Wes Ford) to Huon Aquaculture Company Pty Ltd (**Huon**) and Southern Ocean Trout Pty Ltd via telephone on Friday 17 March 2017 regarding salmonid aquaculture production in Macquarie Harbour **(MH)** and associated environmental conditions. The purpose of the submission is to further inform the EPA Director's Draft Determination regarding the setting of biomass limits and other management controls in MH which was expected on 24 March and then deferred on the same.

During the call, the EPA Director, invited Huon to submit any supplementary information regarding environmental performance either within Huon's leases or outside its leases. It was understood that the offer was made following extensive interaction with and further submissions from the other operators in the waterway over preceding weeks and months. Specifically, the EPA Director suggested providing information pertaining to:

- Dissolved Oxygen **(DO)** levels;
- Results of company monitoring outside of required monitoring for compliance; and
- Any other information Huon deemed important to informing the impending biomass determination.

The following submission is an addendum to Huon's earlier submission to the EPA on 3 January 2017 (Appendix 1) and Huon's presentation provided to the Federal Environment Department as part of the monitoring inspection in February 2017 (Appendix 2). This addendum includes information on;

- Additional environmental monitoring/surveys undertaken by Huon since October 2016;
- Impacts in the World Heritage Area **(WHA)**
- Status of DO and sediments
- Comments on Petuna's recent proposal for management of biomass in MH
- Proposed biomass level and methodology for allocation
- Conversion of a total biomass limit to a Feed Cap
- Importance of the MH growing region to the company

In summary Huon's submission, sets out in greater detail in this document are;

- MH is strategically important to Huon and the salmon farming industry more broadly and a harbour-wide biomass limit is needed and should be reduced to a level at or below 10,000T for at least the next 12 months;
- Huon proposes a methodology that meets the requirements of current management controls and the terms of the MH Area Management Agreement **(AMA);**
- Huon supports the conversion of a biomass limit to a Feed Cap and proposes a methodology for determining the allocation;

2. Additional environmental monitoring/surveys undertaken by Huon since October 2016

2.1 Status of Harbour (Huon leases and harbour-wide)

The following section sets out monitoring results for key indicators (*Beggiatoa*, *Dorvilleids* and in-fauna) and dissolved oxygen.

2.1.1 Beggiatoa (bacterial mats)

Huon leases

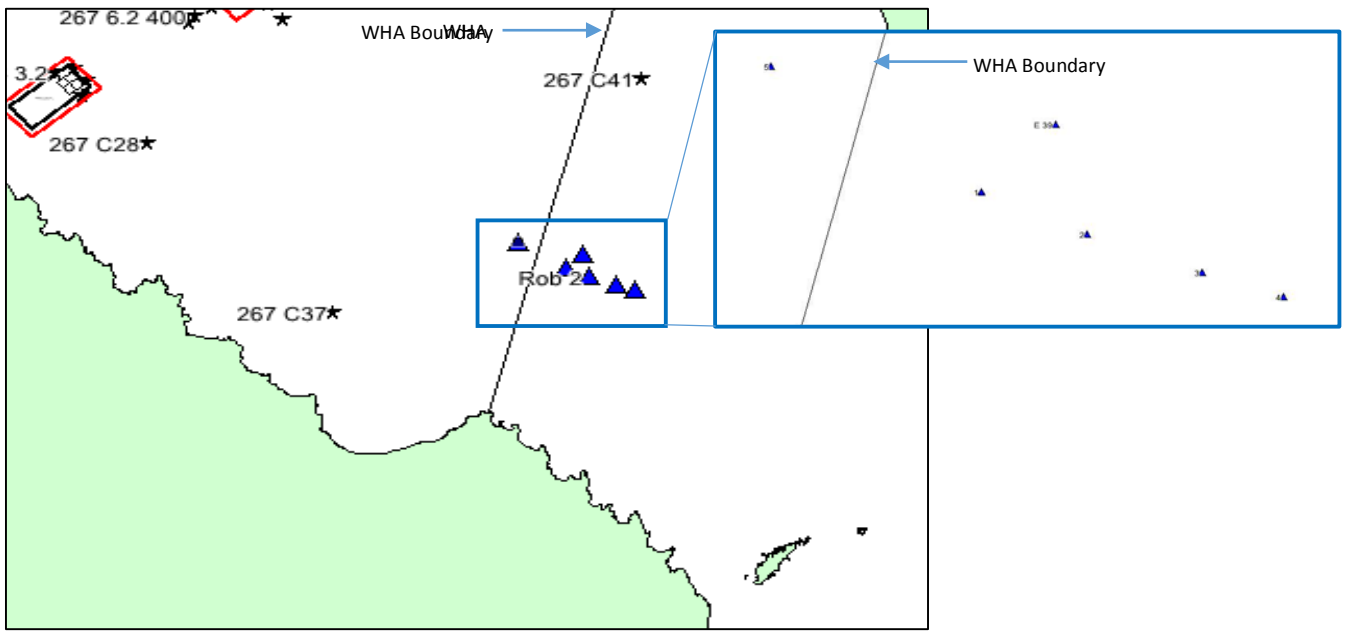
Benthic monitoring videos for January 2017 have been submitted by Huon to the EPA for review and although not officially responded to Huon believes that there will be 3 non-compliances at 35 m sites on the MH Gordon lease (267), none on the MH Strahan lease (220) and none on the MH Pelias lease (216). However, there are also a small number of individual pen bays on all three leases that cannot be stocked at this time due to sediment conditions.

There has been some decrease compared to September 2016 in how far *Beggiatoa* extends out from the MH Gordon lease (267) which is associated with an increase in *Dorvilleid* worms which may be a result of an increase in DO at depth in early 2017. The increase in DO in the water near the bottom of the harbour is due to the ingress of oceanic water coming in through Hells Gates along the bottom of the harbour (see section 2.1.2 for further discussion on DO). This has likely resulted in some signs of recovery on the surface of sediments (eg. decreased amount of *Beggiatoa*), but seems to have had little, if any, impact on the status of organisms within the sediments (see section 2.1.3 for further discussion on IMAS in-fauna results).

WHA

On 6 December 2016 and 25 February 2017, Huon staff undertook sediment surveys of various points inside the MHWHA using a Remote Operated Vehicle (**ROV**). Examples of the sediments were captured in photos. A map and table showing the locations of the survey points are shown in **Figure 1** below.

Figure 1 Map and coordinates of Huon survey points in the WHA



Survey Site number	Coordinates	Approx. location in relation to MHWHA boundary
Point 1	Lat: 42°21.196'S Long: 145°25.335'E	326 m inside the WHA
Point 2	Lat: 42°21.261'S Long: 145°25.518'E	595 m inside the WHA
Point 3	Lat: 42°21.319'S Long: 145°25.718'E	878 m inside the WHA
Point 4	Lat: 42°21.357'S Long: 145°25.860'E	1074 m inside the WHA
Point 5	Lat: 42°21.007'S Long: 145°24.971'E	232 m outside the WHA
IMAS Sampling Site E39	Northing 5309976 Easting 370237	450-470 m inside the WHA

25 February Survey

The World Heritage Area boundary is approximately one kilometre from the nearest fish farm lease (ie. Lease 266) and the sites Huon inspected in the WHA are up to 2 km from the nearest lease.

Huon staff have extensive experience with the assessment of benthic survey results and the regulatory response to such results by both DPIPWE and EPA.

In Huon's experience the five sites surveyed by Huon on 25th Feb 2017 (the coordinates of the 5 sites are shown in **Figure 1**) would be considered to have significant visual impact due to the presence of *Beggiatoa*.

The presence of *Beggiatoa* at this scale, if found at a 35m compliance point, would be considered "non-compliant" by DPIPWE and EPA in Huon's view.

Huon Survey Point 4 (approx. 1074 m inside the WHA boundary and 2km's from the nearest fish farm lease) was still showing *Beggiatoa*. Huon did not undertake any surveys deeper into the WHA. Therefore, it is unknown how much further the presence of *Beggiatoa* extended into the WHA on the day of monitoring.

Photographic examples of sediments at Point 3 (878m inside the WHA) and Point 4 (1074m inside the WHA) are shown below.

Figure 2 Image of Huon Survey Point 3 (878m inside WHA boundary)

Figure 3 Image of Huon Survey Point 4 (1074m inside WHA boundary)

6 December Survey

On 6th Dec 2016 Huon also undertook a sediment survey at the IMAS monitoring site E39 (coordinates are provided in Figure 1) approximately 450m inside the WHA.

Photographic examples of sediments at IMAS site E39 are shown in **Figures 4 and 5** below and indicate the presence of *Beggiatoa* mats on 6 December 2016.

Figure 4 Image of IMAS Monitoring Site E39 showing Beggiatoa on 6 December 2016

Figure 5 Image of IMAS Monitoring Site E39 showing Beggiatoa on 6 December 2016

Importantly, an ROV survey cannot determine the abundance of living organisms within the sediments, therefore it unknown what the status of the sediments below and adjacent to *Beggiatoa* mats are in this regard.

Beggiatoa is an indicator of sediment fouling, but even *Beggiatoa* will disappear as the sediments foul further. Therefore, the absence of *Beggiatoa* could be a positive or negative indicator depending on what stage the sediments lie on this continuum.

Therefore, the relative importance of the presence or absence of *Beggiatoa* should only be considered in conjunction with the other major indicators of sediment health (in-fauna abundance and diversity) and dissolved oxygen levels in the water column before determining the relative health of the sediments.

To this point it is important to see the *Beggiatoa* in the WHA in the context of the IMAS in-faunal results from sampling in Oct 2016 which are presented in other Huon submissions and in 2.3 below.

There is no current or previous research, including that reported in the Cawthron Report (August 2015)[1] and IMAS Report (January 2017)[2], that shows definitively that salmon farming is not playing a contributing role (potentially considerable) to the presence of *Beggiatoa* well within the WHA boundary. This is discussed further in Section 4 in relation to application of the precautionary principle and adaptive management framework.

2.1.2 Dissolved Oxygen (DO)

In early 2017 there has been an increase in DO in the water near the bottom of the harbour due to the ingress of oceanic water coming in through Hells Gates along the bottom of the harbour. This has likely resulted in some signs of recovery on the surface of sediments (eg. decreased amount of *Beggiatoa*), but may have had little, if any impact on the status of organisms within the sediments (see section 2.3 for further discussion on sediment in-fauna).

In addition, historical data clearly shows that increases in DO at depths near the seafloor can be very transitory.

Huon's submission to DPIPWE in late 2014 it stated:

> *"Even in late 2013 significant increases in DO at depth were closely followed by significant declines and return to the overall downward trend in DO."*
>
> *"Therefore increases in DO cannot be considered as anything more than a short-term event."*
>
> *"It would be inappropriate to base any long-term decision on biological capacity of MH on this recent and short-term effect, particularly given the previous 5 years of data."*
>
> *"Should the recent short term slight increase in DO at depth not be sustained and the trend of the last 5 years re-ensue there is a real possibility that large areas of MH bottom waters and sediments could become anaerobic at some stage in the not too distant future."*

[1] Knight B, Forrest B, Johnston C (2015) Macquarie Harbour Environmental and Fish Health Monitoring Review. Prepared for Department of Primary Industries, Parks, Water and Environment Tasmania. Cawthron Report No.2729.

[2] Ross, J and MacLeod, C (January 2017) Environmental Research in Macquarie Harbour Interim Synopsis of Benthic and Water Column Conditions (Prepared for the EPA and DPIPWE)

The above points are as applicable now as they were in 2014.

As shown in **Figures 7-9** below, taken from DPIPWE McMaster Data provided to industry, current increased levels of DO at the deepest depths are not significantly better than occurred in early 2016.

The three charts below are updated McMaster Dissolved Oxygen levels (% saturation) supplied by DPIPWE to industry on 6th Mar 2017. **Figure 7** is an average of all monitoring sites across MH, while **Figures 8 and 9** are for specific monitoring sites C8 and WH2 respectively (see **Figure 6** below for locations)

Figure 6 Dissolved Oxygen monitoring Sites in Macquarie Harbour

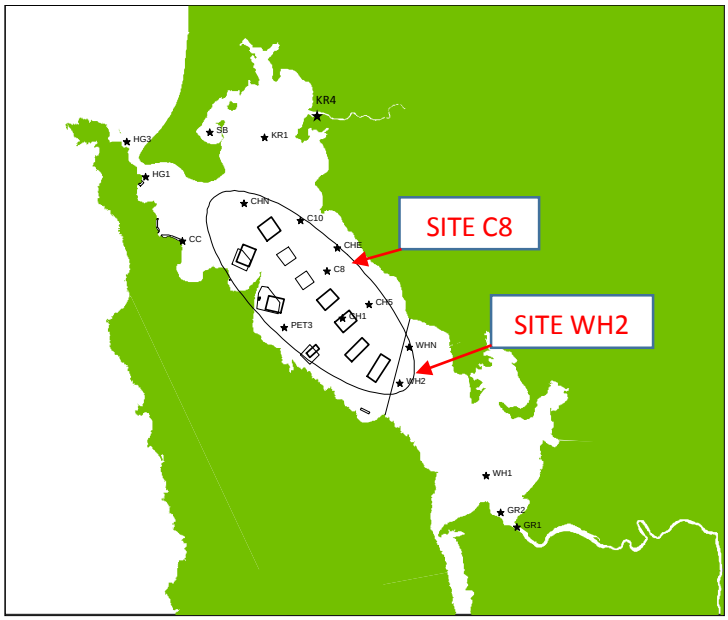


Figure 7 Dissolved Oxygen at depth across all monitoring sites in MH

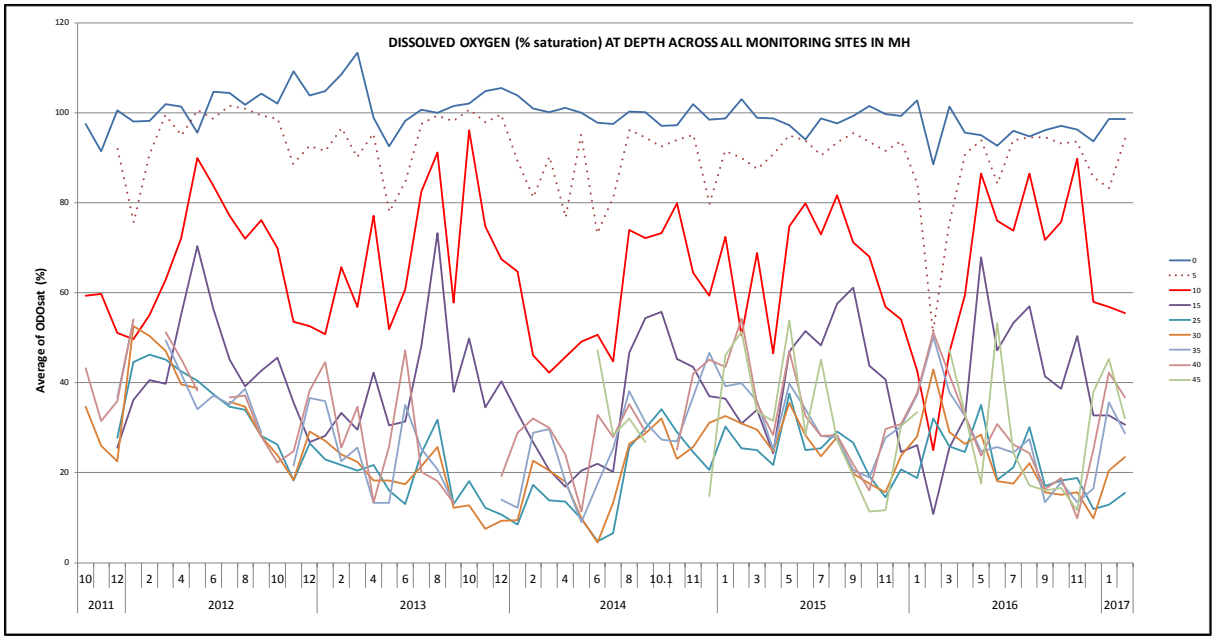


Figure 8 Dissolved Oxygen at depth for monitoring site C8

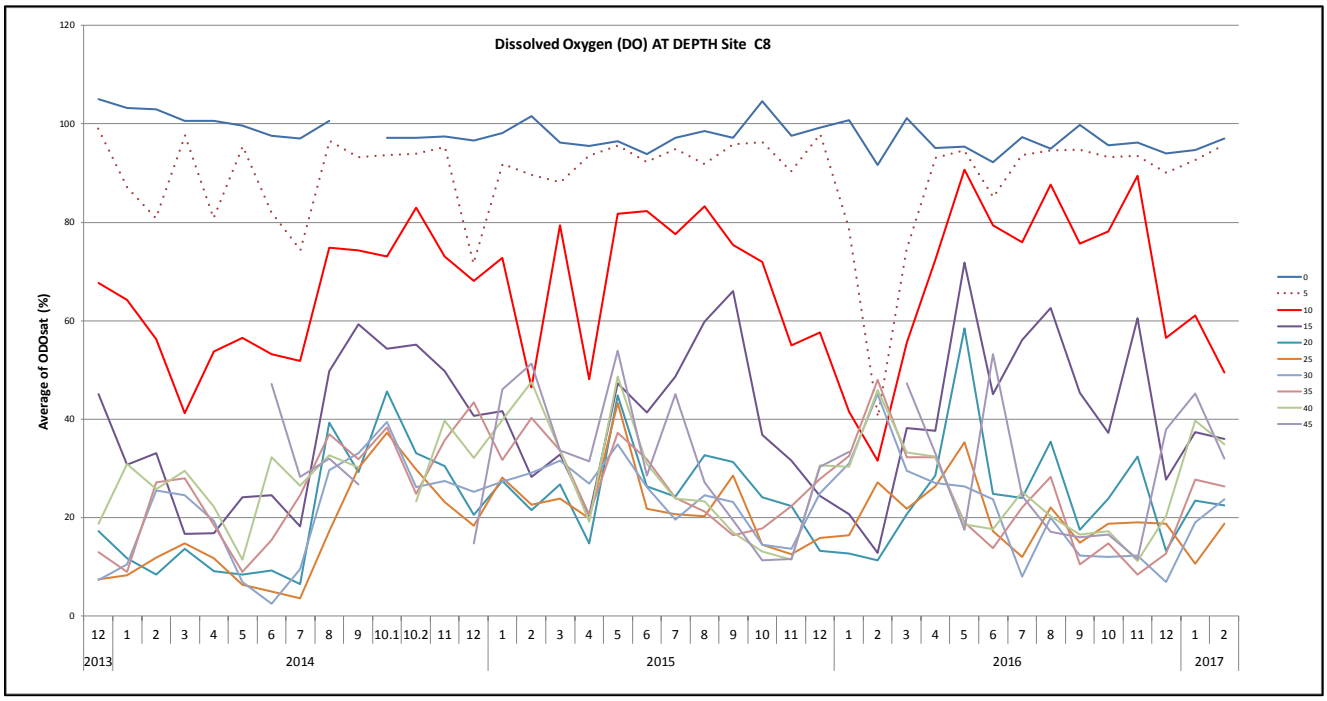
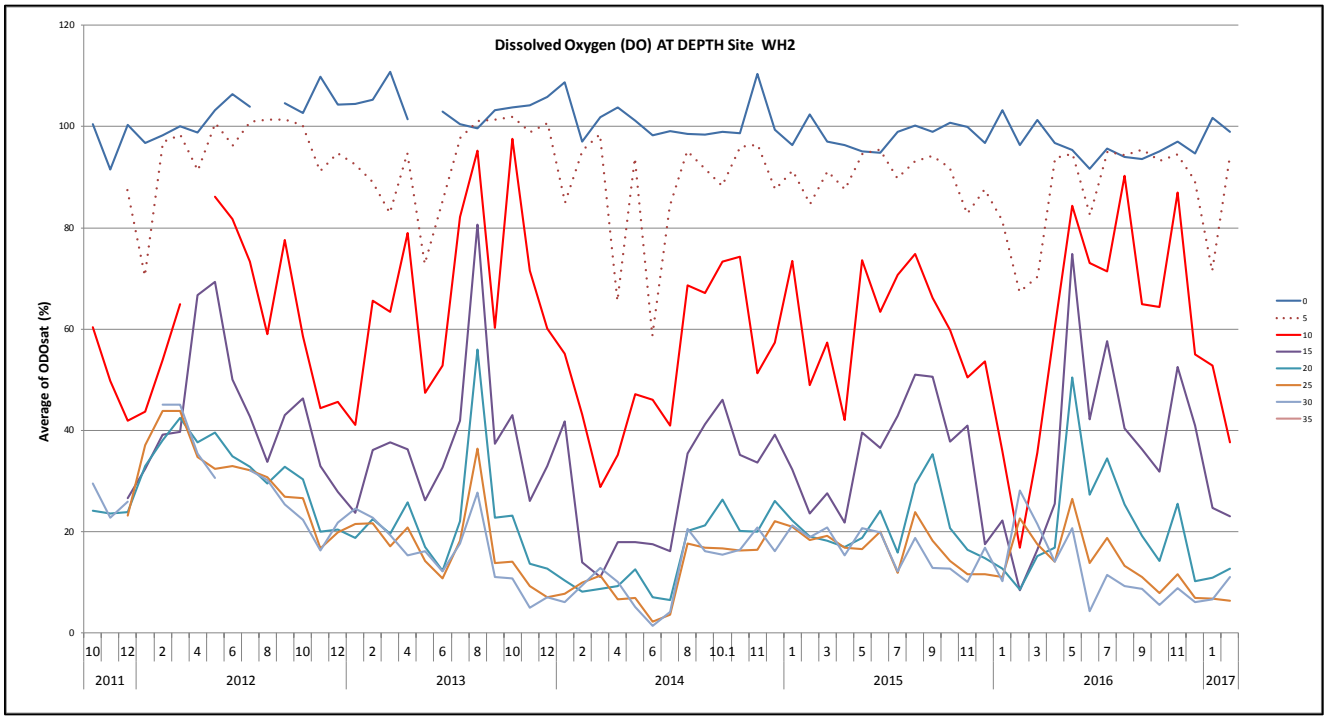


Figure 9 Dissolved Oxygen at depth for monitoring site WH2



Given that DO levels in early 2017 are consistent with early 2016 and DO levels in mid-waters (20-30m) are still very low in early Mar 2017, it is reasonable to anticipate that the extremely low DO levels (virtually zero) seen in 2016 could easily recur in 2017 if similar environmental drivers occur in 2017. In addition, Huon is not aware of any additional current or historical DO information or research results that can confirm that the recent increase in DO levels in bottom waters will be sustained for any significant period of time. This is particularly important in the context of a precautionary approach to decision making, particularly in the short term when other environmental indicators such as benthic in-fauna remain severely compromised.

2.1.3 Sediment conditions (in-fauna)

IMAS sampling of internal lease and external control sites was undertaken in late Jan/early Feb 2017. An official DRAFT Report won't be available until mid-April as analysis of samples and assessment is still in progress.

Huon Leases

Initial advice from IMAS is that Huon's MH Gordon Lease (East of Butt of Liberty - 267) is showing very similar benthic results to those from October 2016 (ie. similar low levels of species abundance and species diversity). The IMAS October 2016 results were the lowest since IMAS sampling started in January 2015. There is perhaps some initial decrease in *Beggiatoa* associated with an increase in *Dorvilleid* worms but this was an early view that IMAS will clarify and provide further detail on through the reporting process.

Without significant renewal of the organisms within the sediments, which IMAS indicates may take a considerable period of time for seriously depleted current state of sediments, it is likely that the capacity for the sediments to recover biologically are already severely compromised. This means that should zero oxygen conditions near the seafloor occur again in 2017 the sediments would have very little resilience and therefore deteriorate more rapidly and more severely that in 2017.

The compromised state of the sediments also poses significant uncertainty in regard to the resilience of the sediments to re-stocking with salmon. IMAS has indicated that fouling of sites may be more rapid than previously experienced ("a new paradigm").

WHA

The IMAS Report (January 2017) presented sediment data for IMAS monitoring site E39 sampled in October 2016. The E39 site is approximately 450 metres inside the WHA boundary as shown in **Figure 10**.

Figure 10 IMAS monitoring sites in Macquarie Harbour

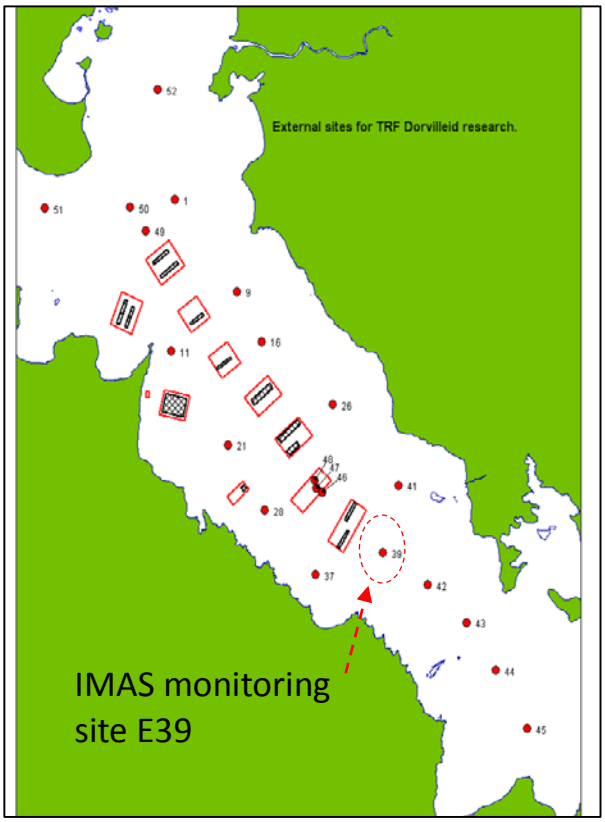


Table 3 of the IMAS Report (2017) (Figure 11) shows *"average abundance/m2 and number of species/grab for leases 1-4 and external sites. Both leases (prefaced with L) and external sites (prefaced with E) are listed in geographical order from the river end to the Harbour mouth highlighting the concomitant gradient in observed changes in species and faunal abundance."*

Figure 11 IMAS Report (2017) Table 3 showing abundance and diversity of in-fauna

Lease/External Site	Average abundance/m^2 Surveys 1-5	Average abundance/m^2 Survey 6	% change	Average no. of species/grab surveys 1-5	Average no. of species/grab survey 6	% change	River ↓ Mouth
L1	556.74	2.47	**99.56%**	4.19	0.17	**96.02%**	
L2	878.39	170.86	**80.55%**	6.96	3.07	**55.93%**	
L3	839.21	145.19	**82.70%**	4.45	2.30	**48.35%**	
L4	1087.60	372.84	**65.72%**	7.23	4.53	**37.27%**	
E39	180.74	4.94	**97.27%**	4.20	0.33	**92.06%**	
E41	39.51	9.88	**75.00%**	1.80	0.67	**62.96%**	
E26	29.63	9.88	**66.67%**	1.50	0.67	**55.56%**	
E21	149.14	79.01	**47.02%**	3.33	1.67	**50.00%**	
E16	112.59	34.57	**69.30%**	4.53	2.00	**55.88%**	
E11	534.32	237.04	**55.64%**	8.47	6.67	**21.26%**	
E49	745.68	483.95	**35.10%**	12.40	11.00	**11.29%**	

From the table above, it can be seen that for site E39:

- Average species abundance was 180.74 / m^2 for earlier surveys 1-5 by IMAS but had decreased down to 4.94 / m^2 in the IMAS Oct 2016 project (Survey 6) (a reduction of 97.27 %)
- Average number of species/grab (ie. species diversity) was 4.20 / GRAB for earlier surveys 1-5 by IMAS but had decreased down to 0.33 / GRAB in Oct 2016 project (a reduction of 92.08 %)

As noted in the executive summary, the Management Controls state that *"a reduction in the number of families by 50 per cent or more relative to reference sites / complete absence of fauna*" represent an unacceptable environmental impact. A number of the reference sites as shown in **Figure 11** taken from the IMAS Report, indicate that there has been a significant reduction in species diversity.

From the data, it appears that in October 2016 the area of sediments almost devoid of living organisms extended out from the Tassal Franklin Lease (Lease 266) to, at least, external Monitoring Site 39 which is approximately 450 metres inside the World Heritage Area boundary. Whilst there has been some discussion that this may be second dead zone, Huon believes this is unlikely given the comments made in the same report including;

"The data clearly shows that the benthic community has been highly enriched close to cages/leases; with Beggiatoa and low diversity communities at the most impacted sites, transitioning to an area dominated by opportunists and then slowly recovering with distance from the enrichment source.

This pattern was clearly evident in the initial IMAS studies (1-5), "but this spatial pattern appears to have extended in the most recent survey (6): such that the area of influence may now reflect the effects of the whole lease rather than individual cages. However, given that changes have also been observed at the external sites it is difficult to untangle potential lease effects from those occurring more broadly in the Harbour in response to the low DO concentrations."

There is nothing in the IMAS research that definitively shows salmon farming is <u>not</u> playing a contributing role in the significant decline in living organisms within the sediments well within the WHA boundary. Potentially the contribution is considerable and Huon remains very concerned about the ongoing deterioration in both oxygen and sediments.

3. Discussion of current environmental indicators

It is important to consider the various environmental indicators holistically to reach an overall understanding of the current environment in MH. Huon's assessment and interpretation of those conditions is provided below.

During 2016, DO from approximately 20m depth to the sea floor was virtually zero across large areas of MH for much of the year. Should a similar water column DO profile be replicated during 2017, Huon is of the view that the extent of sediment souring could be considerably worse in 2017 and over a much larger area of seafloor because sediments are already significantly compromised compared with previous years.

The increase in DO in the water over recent months near the bottom of the harbour has likely resulted in some signs of recovery on the surface of sediments as evidenced by a decrease in *Beggiatoa* associated with an increase in *Dorvilleid* worms. However, early indications from the IMAS sampling does not show an increase in abundance or diversity of sediment in-fauna.

The pattern and trend in benthic in-fauna conditions since the September 2016 company surveys is not unexpected given the level of biomass on leases and the virtually zero DO below 20m for much of the latter part of 2016.

Of particular concern is that the IMAS Jan/Feb 2017 results for Huon's Lease 267 indicate a significant deterioration compared with Jan/Feb 2016 and there is no significant evidence of recovery in deeper layers of the sediments despite a number of months of increased DO at depth.

The increased DO in bottom waters has shown effects on the surface of sediments but not deeper in the sediments which is not unexpected. The in-fauna are needed to mix the oxygen from the water column deeper into the sediments. IMAS have indicated that sediment recovery could be a protracted process given how severely depleted the abundance and diversity of living organisms has become.

If 2017 follows the pattern of DO seen in 2016, where DO levels are virtually zero below 20m from mid-year as the biomass of fish on farms is increasing, it is highly likely we will see more severe and extensive deterioration of the sediments across the harbour in the later part of 2017. Huon remains concerned that without immediate action to reduce Harbor-wide biomass, the industry will enter the next period with the worst benthic conditions since salmon farming started in MH, and considerably worse than at the same time in 2016.

Huon is additionally concerned that the statements contained within an email from Wes Ford to Huon (dated 24 March 2017) are further indications that the harbour-wide impacts are extensive and represent a further deterioration on conditions since the previous sampling IMAS period in late 2016. Specifically, the email states, *"I can advise you that the results from the January benthic compliance monitoring undertaken by the companies show an increase in the level of non-compliance, and an increase in the extent of the Beggiatoa mats."*

In addition, the email goes on to state, *"Preliminary advice from IMAS staff, based on partial analysis of the samples, is that there has been a decline in the levels of in-fauna abundance at a number of locations surveyed across the Harbour. This work is currently being analysed and it will be some weeks before I am provided with definitive findings. However, the preliminary results are concerning to me as I believe they may be showing a downward trend for in-fauna abundance."*

This is of particular concern to Huon. The presence and effectiveness of in-fauna to mitigate the impacts of salmon farming is necessary to ensure ongoing, safe farming operations. The depletion of in-fauna at a harbor-wide scale is a clear and acute symptom of a harbor under significant stress and decreasing capacity to respond to uncertain environmental conditions and salmon farming.

Wes Ford indicates in the same email that, *"Additional monitoring undertaken in late February and early March by Petuna and Tassal show there has been a contraction in the Beggiatoa mats since January, including at some previously non-compliant points. This may be an early sign of recovery, however more data will be required to confirm this."*

The EPA has advised that IMAS monitoring information, even at a preliminary stage, is clearly indicating that the abundance and species diversity of organisms within the sediments is worse than in Oct 2016. It is Huon's view that a contraction of *Beggiatoa* mats on the surface of sediments is likely to be a superficial and temporary effect in response to increased oxygen in the water immediately above.

Without any recovery of organisms within the sediments which are crucial to the remediation process, we are a long way from any significant, sustained and true recovery.

Any suggestion of a sustained and true recovery is extremely premature given the trends in DO and sediment conditions over the last five years. In the event of unfavourable environmental conditions in 2017 (ie. a repeat of zero DO levels at depth across the harbour), Huon believes that there is significant risk of rapid return to extensive *Beggiatoa* mats and more severe and extensive deterioration. History has clearly shown us that seeming improvements can be very transitory.

Huon is of the view that to avoid additional areas of MH progressing to the state of the Tassal Franklin Lease (266) appropriate harbour-wide biomass decisions need to be made urgently to allow effective recovery of DO and sediment conditions. As previously stated by Huon, if hard and effective decisions are not made now, salmon farming in the harbour may need to cease for an unknown period to enable recovery. The longer inaction continues the lower the biomass limit will need to be.

4. Adaptive Management and the precautionary principle to manage in short term

As indicated in Huon's previous submission in January 2017 (Appendix 1) decisions must have regard to the objectives of the *Marine Farm Planning Act 1995* **(MFP Act)** and the objectives of Resource Management Planning System **(RMPS)**.

In addition, in the context of MH, any decision making with respect to biomass limits and management controls for MH needs to take into consideration the Environmental Impact Statement (**EIS**) prepared to facilitate the expansion of salmon farming in MH and approved by the State Government in May 2012 and by the Commonwealth Environment Minister's decision under sections 75 and 77A of the *Environment Protection and Pollution Control Act* 1999 (**EPBC Act**) dated 12 October 2012 (**the Minister's Decision**).

The EIS at p381 states:

"The ultimate aim of the adaptive management program is to monitor the gradual production increase over time and increase knowledge in relation to the sustainability and feasibility of the proposed amendment. Monitoring any potential adverse effects will be associated with the application of relevant mitigation measures based on the severity of the observed impacts."

The Minister's Decision states that:

"the proposed action is not a controlled action, provided it is undertaken with the manner described in the enclosed decision document. This means that, provided that the action is undertaken in that way, it does not require further assessment or approval under the EPBC Act before it can proceed."

Huon's submission is that the statutory objectives and the EIS and Ministers Decision clearly set the context of sustainability being a primary consideration and for taking a precautionary approach.

The Buxton Report (July 2015)[3] provides an explanation of the precautionary principle in the adaptive management context and is provided in the excerpt below.

4.1 Excerpt from Buxton Report (July 2015) (page 12)

How is the Precautionary Principle used in the making of decisions relating to environmentally sustainable development in an adaptive management context?

The Precautionary Principle rose to prominence following its inclusion in the Rio Declaration on Environmental Development (Principle 15) which describes the precautionary approach and its use in the context of environmental conservation as, *"[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*

This description…is explicit that the risk must be one of serious or irreversible damage. Recent reviews of the precautionary principle confirm that identification of a threat, and determination that that threat is significant, should be key prerequisite steps in accepting the application of the Principle (Kearney et al. 2012).

In the application of the precautionary principle, public and private decisions should be guided by:

- Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- An assessment of the risk-weighted consequences of various options.

A major characteristic of the precautionary principle is that it specifies that measures must be taken if there are threats of serious or irreversible environmental damage and these measures should be relaxed only if research demonstrates that they are not needed.

It is not consistent with the Principle to allow scientific uncertainty to negate the necessity to assess whether any particular action or event is a threat.

[3] Buxton, C. 2015 Review of the Tasmanian Abalone Council report on risks to the abalone fishery from further expansion of the salmonid industry

4.2 Application of the Adaptive Management Framework and precautionary principle in MH

Huon is of the view that, to date, that there has not been an effective application of the precautionary principle and that there has been sufficient evidence since 2014 of a serious threat to the environment and on that basis greater steps should have been taken to minimise harbor-wide impacts and potential impacts on the WHA, this view is set out in further detail in Appendix 1.

In the current context, Huon submits that the upcoming decisions pertaining to the management of MH and in particular a harbour-wide biomass limit, must give sufficient regard to the application of the precautionary principle in an adaptive management context.

Specifically, decision making, as outlined by Buxton (July 2015) should be guided by;

- Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- An assessment of the risk-weighted consequences of various options.

Huon submits that a balance between harbour-wide and lease scale management controls are necessary, particularly in the short term, to ensure effective mitigation of the current environmental conditions in MH.

As outlined by Buxton 2015 (pg 13), the National Strategy for Sustainable Development is guided by a number of ecological and development principles which are re-stated below.

Ecological principles are:

- Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations,
- Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation, and
- The global dimension of environmental impacts of actions and policies should be recognised and considered.

Developmental principles are:

- The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised,
- The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised, and
- Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing, and incentive mechanisms, and decisions and actions should provide for broad community involvement on issues which affect them.

Buxton (2015) maintains that all principles and objectives need to be considered as a package. No objective or principle should predominate over the others. However, it is Huon's view that a "lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation" and that there is sufficient evidence for action to be swift and fair to prevent further deterioration of environmental conditions in MH in the next round of decision making.

This view applies equally to Huon in that, currently the three salmon farming companies and the community do not have access to the full set of EPA regulatory monitoring results for each company. For example, following the lease surveys undertaken by the companies in September 2016, the EPA publicly released only the number of non-compliant results at 35m sites for each lease, but did not release the second part of the

monitoring which requires that the company then survey the sediments at 50m intervals away from the lease to see how far the non-compliance extends from the lease.

The overall extent of the non-compliance is known only by the EPA which makes it very difficult for individual companies to consider relative attribution of the non-compliance, that is, as a result of their own activities, or as a result of harbour-wide effects (including the activities of other salmon farms). Without this knowledge it makes it extremely hard for individual companies to develop meaningful management actions that they can have confidence will remediate the non-compliance results at their lease.

In the same way, it is difficult for the public to understand the true extent of environmental impacts and what management actions are being undertaken.

Even with limited information Huon has been able to form a view that there are impacts and that mitigation measures are required through rigorous application of the adaptive management framework and through a fair and appropriate allocation and apportionment of a harbour-wide biomass in MH. Huon also believes that the first Ecological Principle stated above is not being considered appropriately in the context of MH specifically, "Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations". Virtually all of the discussion revolves around the loss of jobs in salmon companies that would be associated with a reduction in salmon production in MH. However, salmon farming is only one source of employment in MH and employs significantly less people than tourism. As outlined on a number of occasions in previous Huon submissions, inappropriate regulation of salmon production leading to severe environmental degradation has much wider ramifications that just to salmon farming employment. Serious environmental degradation or mass mortality of salmon and the international media that would quickly follow can have enormous consequences for tourism in Strahan, Community Health, the Tasmanian Brand and Clean Green Image generally. This is in addition to the serious harm it would do for public confidence in the salmon industry and its plans to expand in other regions. Any discussion about short term salmon farming jobs and associated social or economic impacts in the MH region will be completely outweighed by the more significant loss of employment potentially forced on the Regulator and Industry by environmental degradation and the potential flow on effects this would have for other industries.

4.3 Decision making

Huon believes that there is a strong need to have both harbour-wide and lease scale management controls to effect substantive change in environmental conditions in MH and to preserve the long-term viability of the region for salmon growing.

Similarly, Huon is of the view that the rapid deterioration of sediment in-fauna is a serious indicator of a compromised environment and that timely decision making is critical to ensure that a harbour-wide fallow is not required in the near future.

Whilst Huon is supportive of exploring alternative management models for MH, the proposal put forward by Petuna recently lacks sufficient detail to determine its suitability in the immediate term.

It is Huon's view that a biomass decision and attending management controls made in April 2017 that applies for at least 12 months will allow enough certainty for farmers to determine their stocking plans and production levels.

During that time, there needs to be a process to follow that is sufficiently transparent and known to ensure effective participation and outcomes for the ongoing management of the Harbour.

In the following section, Huon sets out a proposed alternative management methodology that utilises existing allocation methods and controls that are used in other growing regions and tailored to the specific needs of MH.

Huon proposes this methodology as one that could be used in the April decision and would support a further process over the next 12 months to determine the fairest and most suitable allocation and management methods moving forward.

In developing the proposed methodology, Huon has given regard to;

1. The Adaptive Management framework in context of the precautionary principle;
2. The EIS that supported the expansion of salmon farming in MH;
3. The management controls that guide the industry in MH; and
4. The Area Management Agreement that all three companies are parties to.

Points 1 and 2 have been discussed earlier in this section. A summary of points 3 and 4 is provided below.

4.3.1 Management controls that guide the industry in MH

Schedule 3 of the Marine Farming Licence Conditions Relating to Environmental Management of a Finfish Farm (the Management Controls **(MC's)**) that guide the management of salmon farming in MH state;

Condition 1: *The licence holder must comply with the following environmental standards in carrying out operations on the Marine Farming Lease Area to which this licence relates (the **Lease Area**):*

Condition 1.1 *There must be no significant visual, physico-chemical or biological impacts **at or extending beyond 35 metres from the boundary** of the Lease Area. The following impacts may be regarded as significant:*

Visual impacts:

- *presence of fish feed pellets*
- *presence of bacterial mats (e.g. Beggiatoa spp.)*
- *presence of gas bubbling arising from the sediment, either with or without disturbance of the sediment*
- *presence of numerous opportunistic polychaetes (e.g Capitella spp., Dorvilleid spp.) on the sediment surface.*

Biological:

- *A 20 times increase in the total abundance of any individual taxonomic family relative to reference sites*
- *an increase at any compliance site of greater than 50 times the total Annelid abundance at reference sites*
- *a reduction in the number of families by 50 per cent or more relative to reference sites / complete absence of fauna.*

As natural environmental variation renders some locations more susceptible to 'unacceptable' parameter values, the above thresholds will be considered in addition to baseline environmental information for determining the presence/absence of a significant impact.

Condition 1.2 *There must be no significant visual impacts within the Lease Area. The following impacts may be regarded as significant.*

Visual impacts within Lease Area

- *Excessive feed dumping*
- *extensive bacterial mats (e.g. Beggiatoa spp.) on the sediment surface prior to restocking*
- *spontaneous gas bubbling from the sediment.*

Management controls relating to carrying capacity:

3.3.5 The Secretary may from time to time, using whatever information the Secretary considers appropriate, determine the maximum permissible biomass (tonnes per hectare) of finfish that may be stocked within the area covered by this plan or any other specified area within the plan area.

3.3.6 The Secretary is to give notice in writing to any lessees, or if a lease is sub-leased, any sub lessee, subject to a determination made by the Secretary under 3.3.1, 3.3.2 or 3.3.5 and specify the date from which the lessee or sub-lessee must comply with the Secretary's determination.

3.3.7 Compliance with 3.3.5 will be calculated for any point in time, according to the following formula, or any other method deemed by the Secretary to be equal to it, or better.

***Total Biomass (TB)** = Total biomass in tonnes of finfish held by lessees or sub-lessees within the determined area at a single point in time.*

***Total Area (TA)** = Combined total lease area licensed for the farming of finfish held by lessees or sub-lessees within the determined area at that same point in time.*

***TB/TA** must be no greater than the maximum permissible biomass, in tonnes per hectare, as determined by the Secretary.*

Huon also notes that Amendment No.2 to the Macquarie Harbour Marine Farming Development Plan October 2005 regarding Management Controls Relating to Nitrogen Outputs from Finfish Farming as shown below.

Management controls relating to Nitrogen Output

3.2.1 The Director, Environmental Protection Authority, may, from time to time, determine the total permissible dissolved nitrogen output (TPDNO), within specified periods, attributable to licensed finfish marine farming operations (ie; carried out under a licence issued under Part 4 of the Living Marine Resources Management Act 1995), for a specified area.

3.2.2 A specified area may constitute:

- *An area or multiple areas covered by this plan, or*
- *All the area covered by this plan*

3.2.3 For the purpose of assessing quantities of dissolved nitrogen output attributable to licensed finfish marine farming operations, the Director may use any method that the Director is satisfied delivers a proper measure of total dissolved nitrogen output from finfish marine farming operations.

3.2.4 On making a determination under 3.2.1, the Director is to apportion the TPDNO, or a portion of the TPDNO, between the leaseholders licensed for finfish marine farming operations within that specified area or if a lease is subleased, any sub-lease holders within the specified area.

3.2.5 An individual apportionment made under 3.2.4 may be nil.

3.2.6 An individual apportionment made under 3.2.4 may be made in respect of two or more leaseholders, as if they were a single leaseholder.

4.3.2 Area Management Agreement

When the approval to salmon farming was made in 2012, the industry participants, Huon, Tassal and Petuna, developed a binding agreement, known as an Area Management Agreement **(AMA)**, to guide the sustainable operation of salmon farms in MH.

The specific clauses within the agreement pertaining to permissible carrying capacity and biomass are stated below.

6.6 Under this AMA, the Parties agree that the maximum permissible carrying capacity of salmonid fish for each company will be a total biomass (based on number of fish and liveweight) of 35t ha at any one time and averaged over that company's total lease area in Macquarie Harbour.

6.6.1 The Parties understand that this agreed AMA carrying capacity level will be reflected in their respective marine farming licence conditions.

6.6.2 The parties acknowledge that as additional fish health and environmental monitoring data comes to hand, the AMA carrying capacity limit may be modified by unanimous agreement and recommended as a change to licence conditions.

6.8 Should any adjustments to the maximum carrying capacity per ha or net stocking density limits occur, it is agreed they will be applied to each party on an equal basis with each Party enjoying the same maximum tonnage per ha averaged over the company's total leases operated in Macquarie Harbour and the same maximum stocking density limit. Each Party will then immediately act to ensure that the Party becomes compliant with the adjusted capacities and limits as soon as is practically possible.

In addition to this, pursuant to section 4 of the Agreement, the parties agreed that after the "implementation period" they would be bound to comply with the Agreement:

4.1.4 At the end of the implementation period all parties will be bound to fully comply with this AMA.

It is Huon's view that the AMA is binding on the parties and clear in its meaning. The AMA specifies that should adjustments to the maximum carrying capacity per hectare or net stocking density limits occur that the parties will equally share the reduction imposed.

The AMA does not permit one party to have a greater carrying capacity/stocking density than any other and each party is to reduce the maximum carrying capacity per ha or net stocking density limits equally so that each party has the same permissible carrying capacity/stocking density as the other.

It is Huon's view that any decision pertaining to the allocation of biomass that was not consistent with the AMA would need to be on the basis of conclusive scientific evidence.

5. Huon's Proposal for Biomass Determination and Allocation in Macquarie Harbour (MH)

5.1 Background

The initial determination of Biomass Limits in MH associated with the expansion of production was based on an overall harbour-wide biomass limit which was apportioned across companies relative to the lease area (ie. hectares) held by each company. It was then up to each company to manage that allocation within their lease area within prescribed environmental criteria as outlined in the Commonwealth minister's decision under the EPBC Act and Tasmanian marine farming license conditions.

This methodology morphed into a process whereby a harbour-wide biomass cap was determined by DPIPWE/EPA which was then allocated disproportionately (and only known to DPIPWE/EPA) across companies at different allowable Tonnes per Hectare. This apportionment methodology is inconsistent with the conditions of the AMA, was never scientifically justified by the Regulator in making determinations.

On 17 March 2017, Petuna publicly proposed a "lease by lease" allocation of biomass without an overarching harbour-wide biomass limit. This proposal is inconsistent with the conditions of the AMA and there is not sufficient detail in the proposal to make an effective assessment of its merits.

However, historical evidence demonstrates that all leases in MH have positive and negative attributes. Huon is not currently aware of any sound and rigorous scientific basis on which to apply biomass disproportionately, therefore Huon is of the view that it can only really be done on per hectare basis. Huon provides the following comments in support of this view:

- Evidence indicates that leases at the southern end of the harbour are prone to low DO and souring, however these impacts are not limited to these leases as evidenced by large masses of water with low DO and sediment non-compliance at both Huon and Petuna leases further toward the northern end of the harbour.

- In regard to sediment conditions, some of the differences seen between southern and northern leases could be driven as much by the level of stocking on those leases as any other factor. For example, it would appear that the Tassal Franklin lease (266) was far more heavily stocked per hectare than any other lease in the harbour, including the two Tassal leases in the northern end of the harbour. While Tassal's overall T/Ha allocation is 25.35 T/Ha this would not necessarily applied equally across all three Tassal leases. Whereas the Petuna leases have been stocked at the lowest tonnes per hectare (ie. 9.65 T/Ha) and yet still suffering sediment non-compliance and large scale mortality events. To suggest that the Petuna or Huon leases could sustain increased biomass is not self-evident from the results to date. In fact, results suggest they are already at an upper limit.

- In contrast leases at the northern end of the harbour are much more prone to rapid vertical mixing events where water with low DO comes to the surface with the potential of killing large numbers of fish within a very short period (ie. minutes or hours).

- The consequences of mass mortality events can have devastating consequences not only for the Industry but other stakeholders in the harbour such as tourism and local community. The EPA Director has twice written to Huon indicating that he believes mass mortality events are likely (refer Appendix 2).

- Previously a lease at the northern end of the harbour operated by Southern Ocean Trout was closed down and relocated further south in the harbour because of unsuitable environmental conditions.

Following is Huon's proposal for biomass determination going forward giving consideration to the recent Petuna proposal and information provided in Huon's recent submission to EPA and associated appendices as well as the AMA and current management controls.

5.2 Huon Proposal for Determination and Management of Biomass

Step 1 – Establish a safe harbour-wide biomass limit

Given known harbour-wide environmental impacts, Huon's view is that any effective management of the Harbour must first give consideration to a safe harbour-wide biomass limit.

Currently, Huon's allocation is based on 12.46 T/Ha. If this allocation was applied to the total hectares in MH it would equate to a harbour-wide biomass determination of 11,538 Tonnes.

Currently, Petuna's allocation is based on 9.65 T/Ha. If this was applied to the total hectares in MH it would equate to a harbour-wide biomass determination of 8,936 Tonnes.

Given that both Huon and Petuna are incurring some non-compliance at 35 m sites and that Petuna have had two large scale mortality events in since May 2015, Huon is of the strong view that the harbour-wide biomass limit should be at or less than 10,000T. Huon has provided further evidence and rationale for a biomass limit at or below 10,000T in Appendix 1.

The current allocation to Tassal of 25.35 T/Ha is irrelevant given the major non-compliance by Tassal requiring a whole 120 Ha lease (43 % of their total lease area) to be de-stocked.

Step 2 – Apportionment of harbour-wide biomass to leases

The overall harbour-wide biomass limit would then be apportioned to each company according to their lease area (ie. hectares). There would be no disproportionate allocation of biomass between companies. This methodology is consistent with management controls and the AMA.

Specifically, the allocations would be:

Petuna: 416 hectares = 44.92 % of total hectares in MH

Tassal: 280 hectares = 30.24 of total hectares in MH

Huon: 230 hectares = 24.84 % of total hectares in MH

For example if the harbour-wide biomass limit was 10,000 Tonnes then Petuna would be allocated 4,492 Tonnes, Tassal 3,024 Tonnes and Huon 2,484 Tonnes.

Step 3 – Biomass reductions consistent with available lease area

If a lease, or a proportion of a lease, is non-compliant the biomass allowed on that lease is removed (total lease) or reduced (partial lease).

The area (hectares) of non-compliance on a lease would be taken off that company's total allocated biomass. That is, that company's allocated biomass should be reduced in proportion to that unusable lease area.

For example, in the case of Tassal's Franklin lease (266) this would mean that Tassal's allowable biomass in MH would be reduced by 43 % because the Franklin lease area is 43 % of Tassal's total lease area in MH (ie. 120 Ha out of 280 Ha).

This would effectively reduce Tassal's allocated biomass from 30.24 % of the harbour-wide biomass limit down to 17.28 % of the harbour-wide biomass limit and provides an appropriate and effective deterrent and accountability for companies farming unsustainably on their leases.

In terms of partial non-compliance, the principle is applied in the same way. The area of the non-compliant pen bays, that is, those pen bays that cannot be stocked based on sediment conditions under the pen is deducted, the area is deducted from the total lease area as a percentage and the allowable biomass on that lease is reduced by the same percentage.

For example, Huon has a number of pen bays on its MH Gordon Lease (267) which cannot be stocked until ROV videos show that the sediments have recovered.

For example only, if the area of those non-compliant pen bays was ~10% of the total area of Huon's lease area then Huon's available biomass or feed amount would be reduced by ~10%.

If the non-compliant lease or pen bays recover then that proportion of the leases allowable biomass would be reinstated to the company in question.

Step 4: Additional controls to improve effectiveness

(1) Biomass cannot be re-allocated between leases

If a company has a whole or partial lease that needs to be de-stocked then that company should not be allowed to still farm all of their allowable biomass on their reduced lease area on remaining leases (ie. they would be increasing biomass per hectare on the remaining leases) because this will put even greater pressure on those leases inevitably resulting in a more rapidly deteriorating environment.

For example, in Tassal's case, the EPA have publicly released information that the Company was already farming at a significantly higher tonnes per hectare than Huon and Petuna, ie. 25.35 T/Ha (Tassal) compared to 12.46 T/Ha (Huon) and 9.65 T/Ha (Petuna). For Tassal to farm all of their allowable biomass on their remaining 160 hectares out of 280 hectares would mean Tassal would be farming at 44.36 T/Ha on that remaining 160 Hectares. To allow Tassal to farm this higher tonnage in even less lease area at this stocking rate would obviously be unacceptable from the perspective of the Tassal leases themselves, but also because it imposes added risks for adjacent Petuna and Huon leases and the wider environment

(2) Biomass cannot be transferred between companies

It should not be allowed for any company to transfer their allocated biomass to another company otherwise this undermines the entire biomass management process.

5.2.1 Conclusion

It is Huon's view that there must be an overall harbour-wide allowable biomass as a basis to determine biomass/ tonnes/Ha of lease area otherwise the fundamental characteristics of the harbour are ignored as is the AMA.

The methodology proposed by Huon could be applied to the April 2017 biomass determination with known outcomes as it is consistent with current management controls and the AMA. Any methodology that marks a significant departure from the current methodology requires a process to consider it and sufficient time to ensure that it will be effective, fair and legal.

5.3 Huon Proposal for Conversion of a Standing Biomass Limit to a Feed Cap

5.3.1 Background

As presented by Huon in previous submissions, a Standing Biomass Limit is not a meaningful measure for regulating production in MH. Ultimately it is the amount of feed fed and associated increase in fish biomass that drives environmental impacts. In reality, there can be vastly different amounts of feed fed within the same Standing Biomass Limit depending on a company's smolt introduction, grow-out and harvest strategy.

In the Huon and D'Entrecasteux Channel region of Tasmania, salmon production is regulated using a Total Permissable Dissolved Nitrogen Output **(TPDNO)**. The actual amount of dissolved nitrogen output for a lease is calculated based on actual fish biomass converted to dissolved nitrogen through an agreed Food Conversion Ratio and Nitrogen Content of the feed.

Nitrogen is the most appropriate criteria in the south east because it is the most relevant nutrient in relation to phytoplankton blooms which are the primary concern. However, in MH it is dissolved oxygen (DO) and sediment conditions are more relevant because phytoplankton blooms have not historically been a significant feature, largely because of the dark tannin water at the surface.

In MH, both nitrogen and carbon are likely to be the most significant drivers of environmental impacts from salmon farming. Therefore Huon proposes that a Feed Cap (ie. measure of nitrogen and carbon) rather than a nitrogen cap is more appropriate.

A Feed Cap will put a meaningful limit on production and is easy to report by Industry and audit by the Regulator. A Feed Cap also provides an incentive for companies to avoid any wasted feed and to improve the feed conversion ratio (FCR) which is not a feature of the current biomass limit

5.3.2 Proposed methodology for conversion of the existing Standing Biomass Limit to a Feed Cap.

Actual feed data reported by companies over the last three years and reported by the TSGA AMA Officer provide a very good basis from which to determine a Feed Cap.

The data and associated charts below are for the period from Oct 2013 to Oct 2016. Figure 10 shows the amount of feed (Tonnes) for all companies combined in MH for each month. Figure 11 shows the rolling 12 month total feed (Tonnes) for all companies combined in MH.

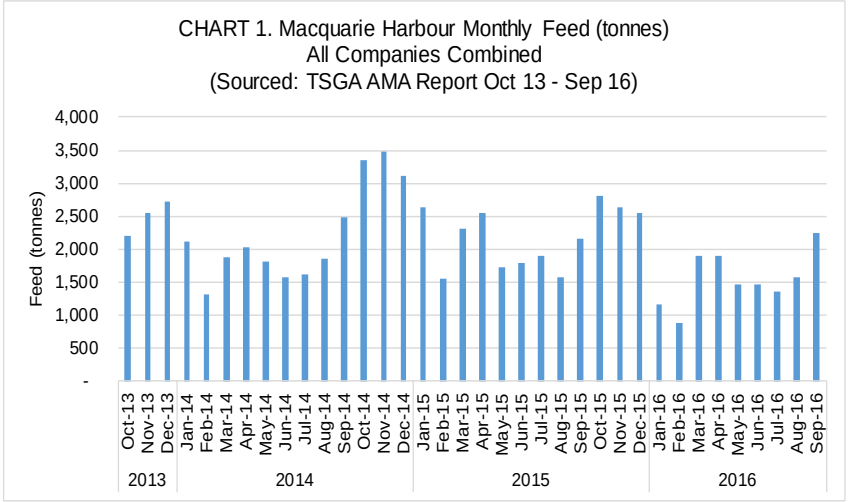
Figure 12 Macquarie Harbour Monthly Feed in tonnes (all companies combined)

	Macquarie Harbour Monthly Feed (tonnes) (Sourced: TSGA AMA Report Oct 13 - Sep 16)	
2013	Oct-13	2,200
	Nov-13	2,556
	Dec-13	2,715
2014	Jan-14	2,106
	Feb-14	1,307
	Mar-14	1,889
	Apr-14	2,021
	May-14	1,817
	Jun-14	1,580
	Jul-14	1,625
	Aug-14	1,866
	Sep-14	2,490
	Oct-14	3,352
	Nov-14	3,475
	Dec-14	3,117
2015	Jan-15	2,628
	Feb-15	1,565
	Mar-15	2,302
	Apr-15	2,546
	May-15	1,726
	Jun-15	1,785
	Jul-15	1,910
	Aug-15	1,575
	Sep-15	2,155
	Oct-15	2,812
	Nov-15	2,645
	Dec-15	2,553
2016	Jan-16	1,157
	Feb-16	894
	Mar-16	1,910
	Apr-16	1,902
	May-16	1,459
	Jun-16	1,478
	Jul-16	1,370
	Aug-16	1,570
	Sep-16	2,248

Macquarie Harbour Rolling 12 Month Feed (tonnes) (Based on: TSGA AMA Rerpot Oct 13 - Sep 16)		
Oct 13 - Sep 14	24,172	
Nov 13 - Oct 14	25,323	
Dec 13 - Nov 14	26,242	
Jan 14 - Dec 14	26,644	
Feb 14 - Jan 15	27,166	
Mar 14 - Feb 15	27,424	
Apr 14 - Mar 15	27,837	
May 14 - Apr 15	28,362	
Jun 14 - May 15	28,272	
Jul 14 - Jun 15	28,476	
Aug 14 - Jul 15	28,760	*
Sep 14 - Aug 15	28,470	
Oct 14 - Sep 15	28,134	
Nov 14 - Oct 15	27,594	
Dec 14 - Nov 15	26,765	
Jan 15 - Dec 15	26,200	
Feb 15 - Jan 16	24,729	
Mar 15 - Feb 16	24,058	
Apr 15 - Mar 16	23,666	
May 15 - Apr 16	23,022	
Jun 15 - May 16	22,755	
Jul 15 - Jun 16	22,448	
Aug 15 - Jul 16	21,908	**
Sep 15 - Aug 16	21,903	
Oct 15 - Sep 16	21,997	

*maximum in period

** equivalent subsequent period to maximum



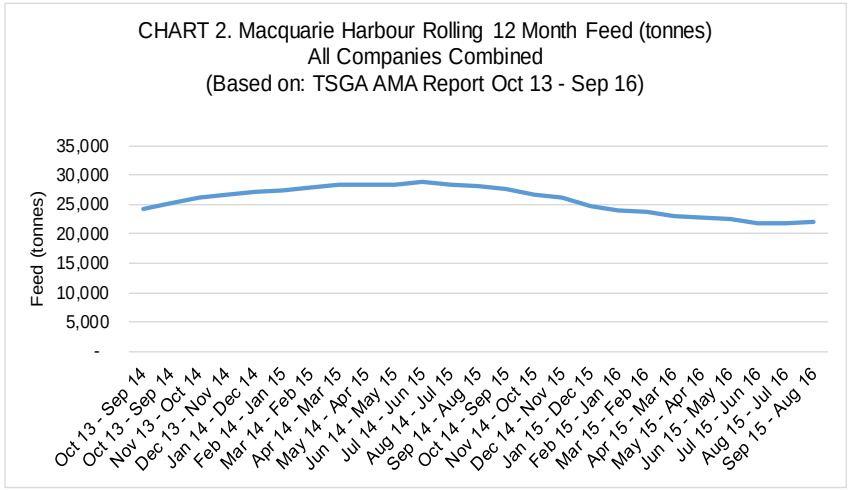


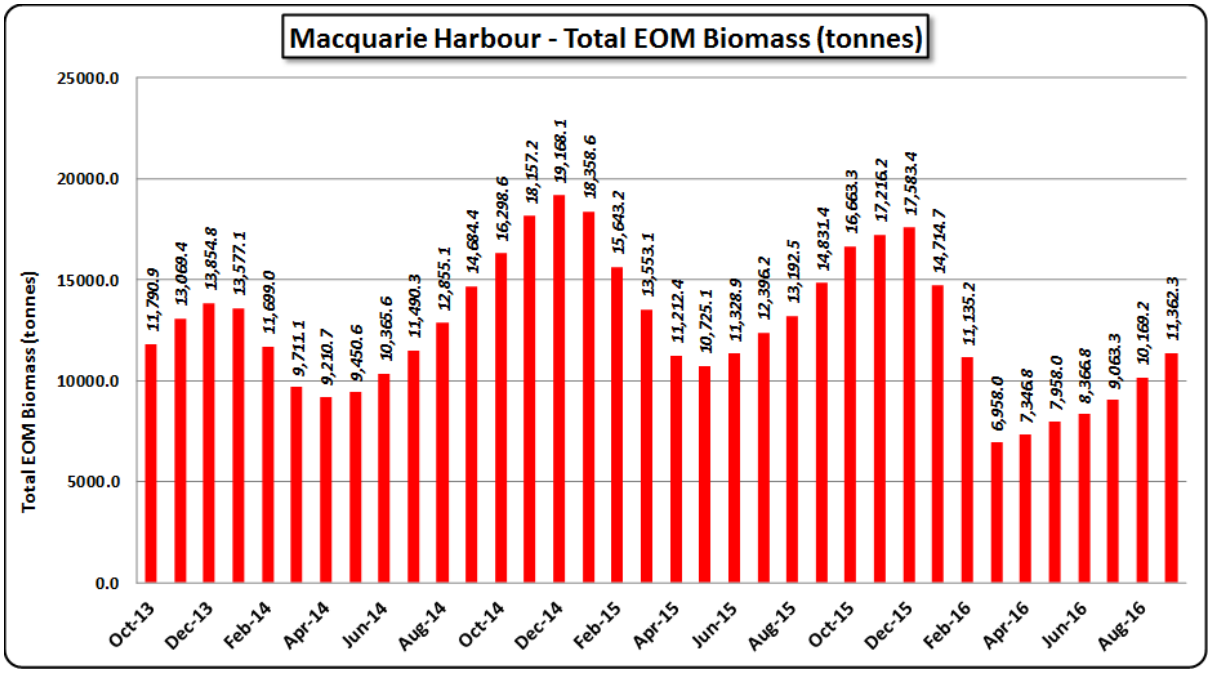
Figure 13 Rolling 12-month average of feed in tonnes (all companies combined)

	12 Month Rolling Feed (tonnes)	Peak EOM Biomass (tonnes)
Aug 14 - Jul 15	28,761	19,168
Aug 15 - Jul 16	21,908	17,583

The peak rolling 12 month feed amount from Oct 2013 – Oct 2016 is in July 2015 at 28,761 tonnes (ie. period from Aug 2014 to Jul 2015). The rolling 12 month feed amount for the subsequent 12 month period (ie. Aug 2015 to Jul 2016) is 21,908 tonnes. Given that environmental conditions in the 2015/2016 summer were particularly bad it is proposed that the period from Aug 2014 to Jul 2015 is the more appropriate period to use as a basis for calculating a Feed Cap.

During this period the maximum Standing Biomass combined for all companies was in Dec 2014 (ie. 19,168 T) – see Figure 12 below taken from the TSGA 36 Month AMA Report.

Figure 14 Macquarie Harbour total monthly biomass in tonnes (all companies combined)



It is proposed that this actual peak biomass be used for determining the Feed Cap rather than the EPA determined Standing Biomass Limit at the time which was higher (20,020 T at that stage).

An appropriate Feed Cap can then be determined based on the actual feed fed by all companies combined in the 12 months from Aug 2014 to Jul 2015 (ie. 28,761 T) revised proportionally according to the new harbour-wide Biomass Limit relative to the peak actual Standing Biomass for the period August 2014 to July 2015 (ie. 19,168 T).

As shown below, if the new harbour-wide Biomass Limit is 10,000 T then the associated Feed Cap would be 15,004 T (ie. 28,761 x 10,000/19,168). This Feed Cap would then be apportioned across companies according to their % of total lease area in MH. This would result in the following allocation of the total Feed Cap (ie. 15,004 T).

- Petuna – 6,741 Tonnes
- Tassal – 4,537 Tonnes
- Huon – 3,727 Tonnes

Based on Aug 14 - Jul 15			Peak Biomass (19,168 T)	
	Ha	% of total Ha	Based on maximum 12 month rolling feed (28,761 T)	Scaled back to 10,000 T relative to peak biomass for the 12 month period
Petuna	416	45%	12,921	6,741
Tassal	280	30%	8,697	4,537
Huon	230	25%	7,144	3,727
Total Feed			28,761	15,004

Based on Aug 15 - Jul 16			Peak Biomass (17,583 T)	
	Ha	% of total Ha	Based on 12 month rolling feed from equivalent subsequent period (21,908 T)	Scaled back to 10,000 T relative to peak biomass for the 12 month period
Petuna	416	45%	9,841.86	5,597
Tassal	280	30%	6,624.33	3,767
Huon	230	25%	5,441.41	3,095
Total Feed			21,908	12,460

The same calculations for the period Aug 2015 to Jul 2016 are provided for comparison however, as previously indicated this period is not considered as appropriate for the Feed Cap determination because of the unusual environmental conditions over the 2015/2016 summer period. Should those environmental conditions occur again they would dictate a reduction in feed output for biological reasons irrespective of any regulated Feed Cap.

In the same way as outlined in the previous section on biomass allocation, the amount of feed available for each company would be reduced relative to the level of non-compliance incurred by that company.

6. Importance of the MH growing region reflected in Huon's investment and commitment to employees and local community

Macquarie Harbour is an important component of Huon's overall production strategy. MH doesn't just provide additional lease area, which is at a premium in Tasmania given the rapidly increasing demand for Huon's products and limited available areas in which to farm fish. MH production focuses on non-maturing triploid salmon which are critical to meeting market demand during certain times of the year (ie. Mar/Apr/May) and rainbow trout. Both these stocks suffer higher losses in fully marine sites where AGD occurs elsewhere in the State which means MH is the only viable place to farm these fish. MH also provides a distinct biosecurity region where the disease status is uniquely different to other growing areas in the State. Therefore a failure in MH doesn't just reduce general salmon farming capacity, it has the added impact of affecting critical components of Huon's overall production strategy which are difficult to replicate.

Huon's acquisition of the Southern Ocean Trout business was executed to reduce overall risk to the business by mitigating biosecurity risk and supply risk as outlined above. Risk mitigation is a hallmark

of Huon's business strategy and practice and should MH fail or continue to be significantly compromised or should Huon receive unfair treatment in terms of biomass allocation or other management controls, it increases the risk to the company and potentially significant cost both of which may be "material" to the business.

Huon's submission in January 2017 (Appendix 1) further sets out the significant investment Huon has made in the region coupled with considered management of the growing region to protect the security of employment for the team and support for the Strahan community.

Huon has demonstrated through its investment and management approach that MH is a valued and critical aspect of the company's production and intends to continue farming the region safely and sustainably for the foreseeable future.

7. Conclusion

In conclusion, Huon submits;

1. MH continues to be of strategic importance to Huon's operations and in recognition of that, Huon has conservatively managed in MH for an extended period including rigorous application of the adaptive management framework to its own operations. Huon's commitment to the region is reflected in its investment of over $50M since Huon commenced farming in MH.
2. The recent increase in DO in bottom waters and attending response in *Beggiatoa* and *Dorvilleids* within MH do not represent any significant recovery in light of current in-fauna levels and there is no evidence to indicate that the recent DO increase will be sustained.
3. The current biomass limit of 14,000T is in excess of what the current scientific evidence suggests is a sustainable level for MH. Huon submits that the biomass limit should be set at or below 10,000 tonnes for the whole of MH.
4. Huon advocates a rapid and effective application of the Adaptive Management framework and precautionary principle to prevent further impacts on MH and the MHWHA.
5. Huon proposes a methodology for allocation of a harbour-wide biomass that treats the operators equitably and meets the requirements of current management controls and the AMA.
6. Huon requests that the next biomass decision be applied for 12 months to provide some certainty for decision making and also to provide enough time to consider potential alternative models of management in MH.
7. Huon supports the conversion of a harbour-wide biomass to a feed cap and provides a proposed methodology and allocation.